

IN THE CLAIMS

Claims 1-17 are pending in this application. Please amend claims 1-9 and 14-17 as follows:

1. (Currently Amended) A method for ~~calculating~~ determining the position of a mobile terminal, using differences between propagation distances of radio signals being transmitted ~~and/or~~ and received ~~on channels~~ between base stations and a mobile terminal, said method comprising:

measuring differences between propagation distances of radio signals ~~on channels~~ between a plurality of base stations and a mobile terminal;

determining if the mobile terminal is located in close proximity to a base station based on the measured differences;

calculating the position of the mobile terminal by a ~~common~~ trilateration formula if it is determined that said mobile terminal is not in close proximity to any of said base stations;

calculating the position of the mobile terminal in close proximity to a base station without said trilateration formula if it is determined that said mobile terminal is in close proximity to one of said base stations; and

outputting the position of the mobile terminal calculated.

2. (Currently Amended) The method for ~~calculating~~ determining the position of a mobile terminal as in claim 1, wherein:

said determining if the mobile terminal is in close proximity to a base station further comprises:

determining whether a difference between the propagation distance ~~on the channel~~ between one base station out of said plurality of base stations, and the mobile terminal, and another propagation distance ~~on the channel~~ between another base station and the mobile terminal, falls within a predetermined tolerance for the distance between said one base station and said another base station whereby it is determined that said mobile terminal is in close proximity to the base station;

determining if the difference between the propagation distances with regard to all of said base stations does not fall within the predetermined tolerance for the distance between said base stations, whereby it is determined that said mobile terminal is not in close proximity to any of said base stations.

3. (Currently Amended) The method for ~~calculating~~ determining the position of a mobile terminal as in claim 2, wherein said predetermined tolerance is corresponding to required accuracy of positioning the mobile terminal.

4. (Currently Amended) The method for ~~calculating~~ determining the position of a mobile terminal as in claim 1, wherein:

said determining if the mobile terminal is in close proximity to a base station further comprises:

measuring the quality of signals that said mobile terminal receives from said plurality of base stations,

comparing the received signal quality with a predetermined threshold, and

determining whether said mobile terminal is in close proximity to any of said base stations, based on the result of the comparison.

5. (Currently Amended) The method for ~~calculating~~ determining the position of a mobile terminal as in claim 1, wherein:

said determining if the mobile terminal is in close proximity to a base station further comprises:

measuring the quality of signals that said mobile terminal received from said plurality of base stations,

identifying ~~[[the]]~~ a maximum value of the measured received signal quality and the base station that transmits the signal of the maximum value,

comparing the maximum value of the received signal quality thus identified with a predetermined threshold, and

determining whether said mobile terminal is in close proximity to any of said base stations, based on the result of the comparison.

6. (Currently Amended) The method for ~~calculating~~ determining the position of a mobile terminal as in claim 1, wherein said calculating the position of the mobile terminal in close proximity to a base station further comprises:

equating the position of the base station determined as being in close proximity to said mobile terminal ~~[[with]]~~ as the position of said mobile terminal.

7. (Currently Amended) The method for ~~calculating~~ determining the position of a mobile terminal as in claim 1, wherein said calculating the position of the mobile terminal in close proximity to a base station further comprises:

providing a plurality of point candidates where the mobile terminal ~~may be~~ is positioned through calculation with the differences between the propagation distances obtained by said measuring the differences between the propagation distances and

averaging said plurality of point candidates into a point as the position of said mobile terminal.

8. (Currently Amended) A positioning system which measures reception timing of radio signals being transmitted ~~and/or~~ and received ~~on channels~~ between base stations and a mobile terminal and calculates the position of the mobile terminal, using differences between propagation distances of the radio signals, said positioning system comprising:

a signal receiver receiving radio signals ~~in a signal receiver~~ transmitted ~~on channels~~ between a plurality of base stations and a mobile terminal; and

a processor measuring the differences between propagation distances of the received radio signals ~~in a processor~~[[,]];

a determining unit determining if the mobile terminal is in close proximity to a base station ~~in a determining unit~~ based upon the measured differences;

a calculating unit calculating the position of the mobile terminal by a ~~common~~ trilateration formula if it is determined that said mobile terminal is not in close proximity to any of said base stations ~~in a calculating unit~~; and calculating the position of the mobile terminal in close proximity to a base station without said trilateration formula if it is determined that said mobile terminal is in close proximity to one of said base stations ~~in said calculating unit~~; and

an output unit outputting the position of the mobile terminal to an output terminal calculated by ~~the common formula~~ or said trilateration formula or calculated without said trilateration formula to be in close proximity to a base station.

9. (Currently Amended) The positioning system as recited in claim 8, wherein:

said determining unit, determining if the mobile terminal is in close proximity to a base station, also determines whether a difference between the propagation distance ~~on the~~

~~channel~~ between one base station out of said plurality of base stations and the mobile terminal, and another propagation distance ~~on the channel~~ between another base station out of said plurality of base stations and the mobile terminal, falls within a predetermined tolerance for the distance between said one base station and said another base station;

wherein if the difference between the propagation distances with regard to all said base stations does not fall within the predetermined tolerance for the distance between said base stations, said determining unit determines that said mobile terminal is not in close proximity to any of said base stations; and

if the difference between the propagation distances with regard to any of said base stations falls within the predetermined tolerance for the distance between base stations, said determining unit determines that said mobile terminal is in close proximity to the base station.

10. (Original) The positioning system as recited in claim 8, wherein said predetermined tolerance corresponds to a required accuracy for positioning the mobile terminal.

11. (Original) The positioning system as recited in claim 8, wherein:

said determining unit determining if the mobile terminal is in close proximity to a base station, also measures the quality of signals that said mobile terminal received from said plurality of base stations, and

compares the received signal quality with a predetermined threshold, and
determines whether said mobile terminal is in close proximity to any of said base stations, based on the result of the comparison.

12. (Original) The positioning system as recited in claim 8, wherein:

said determining unit determining if the mobile terminal is in close proximity to a base station, also measures the quality of signals that said mobile station received from said plurality of base stations,

identifies a maximum value of the measured received signal quality and the base station that transmits the signal of the maximum value,

compares the maximum value of received signal quality thus identified with a predetermined threshold, and

determines whether said mobile terminal is in close proximity to any of said base stations, based on the result of the comparison.

13. (Original) The positioning system as recited in claim 8, wherein:

said determining unit determining if the mobile terminal is in close proximity to a base station, also measures the quality of signals that said plurality of base stations received from said mobile terminal,

compares the received signal quality with a predetermined threshold, and

determines whether said mobile terminal is in close proximity to any of said base stations, based on the result of the comparison.

14. (Currently Amended) The positioning system as recited in claim 8, wherein:

said determining unit for determining if the mobile terminal is in close proximity to a base station, also measures the quality of signals that said plurality of base stations received from said mobile terminal,

identifies ~~[[the]]~~ a maximum value of the measured received signal quality and the base station that receives the signal of the maximum value,

compares the maximum value of the received signal quality thus identified with a predetermined threshold, and determines whether said mobile terminal is in close proximity to any of said base stations based on the result of the comparison.

15. (Currently Amended) The positioning system as recited in claim 8 wherein said calculating unit for calculating the position of the mobile terminal in close proximity to a base station, equates the position of the base station determined as being close to said mobile terminal ~~[[with]]~~ as the position of said mobile terminal.

16. (Currently Amended) The positioning system as recited in claim 8, wherein said calculating unit for calculating the position of the mobile terminal in close proximity to a base station,

provides a plurality of point candidates where the mobile terminal ~~may be~~ is positioned through calculation with the differences between propagation distances obtained by said processor for measuring the differences between the propagation distances and averages said plurality of point candidates into a point as the position of said mobile terminal.

17. (Currently Amended) A position calculation apparatus which receives radio signals being ~~transmitted/received~~ transmitted and received ~~on channels~~ between base stations and a mobile terminal and calculates the position of the mobile terminal, using differences between propagation distances of the radio signals, said position calculation apparatus comprising:

a unit for measuring the differences between propagation distances of the signals ~~on the channels~~ between a plurality of base stations and a mobile terminal;

a second unit for determining if the mobile terminal is close to a base station, which determines whether said mobile terminal is in close proximity to any of said base stations based on the measured differences;

a third unit for calculating the position of the mobile terminal by a ~~common~~ trilateration formula if it is determined that said mobile terminal is not in close proximity to any of said base stations;

wherein said third unit ~~[[may]]~~ also ~~eaculate~~ calculates the position of the mobile terminal in close proximity to a base station without said trilateration formula if it is determined that said mobile terminal is in close proximity to one of said base stations; and

an output terminal for outputting the position of the mobile terminal calculated without said trilateration formula by said third unit after calculating the mobile terminal position in close proximity to a base station, or for outputting the position of the mobile terminal calculated by said third unit after calculating the mobile terminal position by a ~~common~~ said trilateration formula.